

IN THE CLAIMS

(1) Claim 1 (currently amended): An electron beam duplication lithography apparatus comprising:

a first substrate;

6, a field emitter deposited on the first substrate in a predefined pattern whereby an active field emission material is deposited on the first substrate in the predefined pattern on a permanent basis such that all of such field emission material emits electrons on a continuous basis when activated, and whereby no active field emission material resides in spaces between the predefined pattern so that no field emission of electrons occurs in such spaces;

a second substrate positioned a distance from the first substrate;

an electron beam resist layer deposited on the second substrate; and

circuitry for establishing an electric field to thereby cause an emission of electron beams from the ~~field emitter~~ active field emission material towards the electron beam resist layer in order to modify the electron beam resist layer in a pattern substantially identical to the predefined pattern.

(2) Claim 2 (original): The apparatus as recited in claim 1, further comprising a magnetic field lens positioned to focus the electron beams as they are emitted from the field emitter towards the electron beam resist layer.

(3) Claim 3 (original): The apparatus as recited in claim 1, further comprising an electric field lens positioned to focus the electron beams as they are emitted from the field emitter towards the electron beam resist layer.

(4) Claim 4 (original): The apparatus as recited in claim 1, wherein the establishing circuitry further comprises a conductive layer between the first substrate and the field emitter.

(5) Claim 5 (original): The apparatus as recited in claim 1, wherein the establishing circuitry further comprises a conductive layer between the second substrate and the electron beam resist layer.

(6) Claim 6 (original): The apparatus as recited in claim 1, further comprising a conductive or dielectric material deposited on the first substrate between portions of the patterned field emitter.

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(7) Claim 7 (original): The apparatus as recited in claim 6, wherein the conductive or dielectric material covers edges of the field emitter

(8) Claim 8 (original): The apparatus as recited in claim 6, wherein a surface of the conductive or dielectric material is coplanar with a emitting surface of the field emitter.

(9) Claim 9 (original): The apparatus as recited in claim 6, wherein an emitting surface of the field emitter is recessed below a surface of the conductive or dielectric material.

(10) Claim 10 (currently amended): A method for performing duplication lithography, comprising the steps of:

providing a first substrate with a field emitter deposited on the first substrate in a predefined pattern whereby an active field emission material is deposited on the first substrate in the predefined pattern on a permanent basis such that all of such field emission material emits electrons on a continuous basis when activated, and whereby no active field emission material resides in spaces between the predefined pattern so that no field emission of electrons occurs in such spaces;

providing a second substrate positioned a distance from the first substrate with an electron beam resist layer deposited on the second substrate; and

establishing an electric field to thereby cause an emission of electron beams from the ~~field emitter~~ active field emission material towards the electron beam resist layer in order to modify the electron beam resist layer in a pattern substantially identical to the predefined pattern.

(11) Claim 11 (original): The method as recited in claim 10, further comprising positioning a magnetic field lens to focus the electron beams as they are emitted from the field emitter towards the electron beam resist layer.

(12) Claim 12 (original): The method as recited in claim 10, further comprising positioning an electric field lens to focus the electron beams as they are emitted from the field emitter towards the electron beam resist layer.

(13) Claim 13 (original): The method as recited in claim 10, wherein a conductive layer is positioned between the first substrate and the field emitter.

(14) Claim 14 (original): The method as recited in claim 10, wherein a conductive layer is positioned between the second substrate and the electron beam resist layer.